

We have successfully completed the development program for our Blast Shutter!

The 2-phase program, which was executed in consultation with ABS Consulting of USA, includes the use of finite element analysis (FEA) to design the door system and then validate the model with a full-scale shock tube test of the working model.

The development program culminated with the shock tube testing of 2 units of full-scale working models, each measuring W 3700mm x H 4950mm. The test results were in excellent agreement with the FEA analysis using the measured test loads for both PL1 and PL2 configurations. In all the tests, minimal permanent damage was observed and no debris was produced.

The full test report can be viewed at <http://www.gliderol.com.sg/test-reports-certification.html>

This validation indicates that our FEA model can be reliably used to assess the likely performance of our blast shutter for door dimensions larger than the test specimen size or for alternate blast loads.

Based on the blast test results, our shutter is capable of two performance levels :-

1) Blast Mitigating (PL1)

PL1 (without bottom restraints) has been tested and shown to be capable of achieving limited damage in response to a blast load with peak pressure **75 kPa** and peak impulse **1050 kPa-ms**;



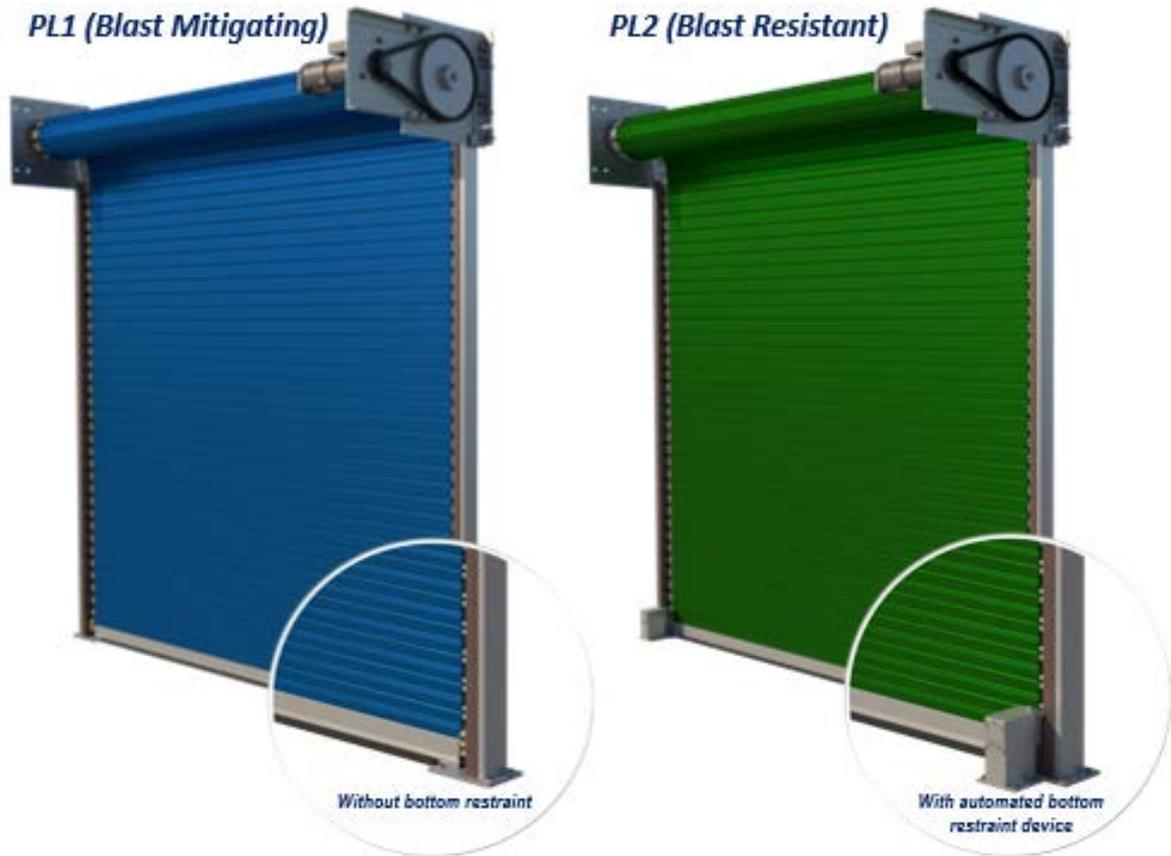
2) Blast Resistant (PL2)

PL2 is fitted with a pair of automated bottom restraint device that will work with the motor operator to ensure that the restraints will always engage whenever the shutter is in the closed position. PL2 has been tested and shown to be capable of achieving limited damage and be fully retained in response to a blast load with a peak pressure **40 kPA** and peak impulse **500 kPa-ms**.



SHOCK-TUBE TESTING

Shock-tube testing uses a sudden burst of compressed air to create a blast pulse, which travels down the tube and is applied to the test specimen installed at the end of the tube. The blast load creates a specified positive blast pressure and impulse on the test specimen.



Please click [here](#) to view our Blast Shutter brochure.

You may also wish to view our [Patent Information](#) for this product.